Work Plan

Project Understanding

As part of its state long range plan, Move AZ, Arizona DOT (ADOT) conducted a high-level analysis of goods movement in 2004. That effort focused primarily on the state highway system, using available public data sources many of which are now approaching ten years old. More recently ADOT contracted for an Arizona Railroad Inventory and Assessment to document a baseline assessment of the state's current railroad infrastructure. This effort is currently in the final stages of completion, and the data and analysis from that effort will be available for the proposed Freight Analysis Study.

ADOT has expressed an interest in building on previous studies and analysis to advance freight as an integral part of their long range planning process. This proposal presents services the Wilbur Smith Associates Team can perform to assist ADOT in taking a comprehensive examination of Arizona's multimodal freight network, the current and future demands on that network, and steps ADOT can take to make freight analysis an integral part of Arizona's long-range planning process.

The WSA Team provides ADOT access to experts with public and private experience in trucking, rail/intermodal, and air cargo operations, as well as seasoned professionals focused on freight economics, planning and infrastructure design/operations. Our team resources also provide ADOT access to state-of-the-art freight planning tools and data, allowing our team to conduct true multi-modal systems analysis.

Task 1 – Project Kickoff Meeting

The WSA Team understands that the ultimate goal of this project is to conduct an analysis that is relevant to ADOT's planning needs, and provide a jumping-off point with a framework for future freight planning activities. As the first step in achieving those goals, the project manager and key project personnel from the WSA Team will meet with the ADOT Technical Advisory Committee (TAC) to discuss the proposed Work Plan and clarify the TACs areas of emphasis, alterations in approach, and format of the final products. Also to be discussed at this meeting is the final make-up of the TRANSEARCH commodity flow database for the project and stakeholder outreach plan.

Following the Kick-off Meeting a Final Work Plan will be submitted refining roles, resources, milestones, deliverables, and decision points in the study.

Task 2 - Inventory & Analysis of Arizona's Freight Transportation Industry in Arizona

Task 2.1 - Identify Arizona Industries Dependent on Freight Transportation

The *Move AZ Plan - Appendix G. Goods Movement in Arizona* document produced in 2004 presents a variety of economic data that is useful for interpreting Arizona industries that rely heavily on transportation for their economic success. WSA would suggest using information about the key industries highlighted in that report as the starting point that will be updated with more current economic and commodity flow data. The data sets that will be used to complete this study include:

- As a corporate resource, WSA purchases annual updates to the Woods & Poole Economics, Inc. ***Complete Economic and Demographic Data Source*** containing regional data and projections for the U.S. and all regions, states, and counties for selected years from 1969 through 2030. This data is available to the project at no cost.
- TRANSEARCH from Global Insight is a proprietary commodity flow dataset from Global Insight. TRANSEARCH offers to provide much greater geographic and commodity detail regarding freight movements in Arizona. An initial price quote from Global Insights suggests the cost of TRANSEARCH to support this project will be approximately $50,000. (The optional attributes and associated costs for the TRANSEARCH database will be presented to the TAC for discussion).

Taking direction from ADOT, WSA will use existing and new/updated data sources to identify those industries critically dependent on freight services in Arizona. The analysis will identify key industries and their markets across a range of transportation service levels ranging from high-volume, low cost to low volume, highly responsive services.

Task 2.1.1 - Freight Flow Summary
The WSA Team has extensive experience analyzing commodity flow data, having already developed commodity profiles for more than ten states, in addition to summaries at local, regional, and corridor levels, including an in-depth analyses of commodities moving through Arizona on the I-10 Corridor. The product of this task will provide ADOT with a better understanding of the demands being placed on Arizona's multimodal transportation networks by domestic and international freight flows.

Task 2.1.2 - Public Involvement Plan
The WSA Team recommends that upon identifying key freight dependent industries, ADOT consider forming an Arizona Goods Movement Task Force, whether ad hoc for this study effort, or as a permanent advisory body to the ADOT planning process.

Public involvement in the transportation planning process is a systematic means of developing two-way communication between citizens affected by public transportation investment decisions and the transportation agencies charged with making those investments. "Engaging the private sector" is a form of public involvement aimed at establishing two-way communications with the stakeholders most affected by freight related transportation planning and investment decisions. Traditional approaches to public involvement have had only marginal success in generating the interest of freight stakeholders, so new approaches are strongly encouraged. Freight advisory committees and boards are an increasingly popular and effective way to integrate freight issues into the transportation planning process. WSA's Project Manager for this study has hands-on experience in establishing and maintaining freight advisory groups.

Based on the need to understand the logistics of goods movement flows occurring within Arizona our approach is based on engaging regional business supply chain managers and carrier representatives as soon as possible, at the outset of the study. Working with the TAC, a core group of 15-20 individuals from key industry and carrier organizations will be expeditiously selected for interviews and to determine the key issues facing the freight industry in Arizona and also gauge their interest in forming an advisory committee to provide on-going guidance as the study progresses. We will strive to identify a diverse population of stakeholders that cuts across various sectors of the freight industry. In our previous experience, WSA has found that conducting interviews across various sectors of the freight industry is an excellent way to establish a freight advisory committee by identifying prominent industry stakeholders and gauging their interest in on-going freight planning activities. We will also contact regional chambers of commerce and the Phoenix chapter of the Council of Supply Chain Management Professionals (CSCMP), Round Tables to identify prominent members of Arizona's freight community. As a starting

point, the WSA Team proposes choosing a cross section of committee candidates from the following groups:

- Major businesses / industries that rely on the region's transportation system
- Major manufacturers and international shippers
- Major retailers
- Service / utility providers (e.g. waste haulers)
- Major carriers from trucking and rail modes
- Air freight forwarders and integrated air cargo companies
- Operators of major intermodal / freight facilities
- Airports
- Intermodal rail yards
- Warehouse / distribution centers
- Logistics service providers
- Municipal agencies and other service providers

In addition, if so desired, WSA would assist ADOT to set-up and host the FHWA Workshop "*Engaging the Private Sector*," as a precursor to the formation of a Freight Trade Advisory Taskforce. Hosting this workshop will provide a "no-cost to the project" opportunity for ADOT to educate internal planning staff and MPO partners on the goals of the Multi-modal Freight Analysis Study. Since WSA co-presents this workshop with FHWA, the day-long workshop will be customized to help ADOT explore the desired make-up of the Council with its planning partners. The workshop can also be opened to private sector attendance and participation.

Task 2.2 - Identify Critical Trends in the Freight Transportation Industry

In-person interviews and survey methods will be used to gather information about the critical trends in the transportation industry and how they affect Arizona businesses. The details of how the outreach effort will be performed will be documented in the Public Involvement Plan for the study; however, our suggested approach for outreach would involve two components: targeted interviews and on-the-ground observations of freight industry operations. Our budget for this task will be based on conducting fifty interviews with representatives from companies in the targeted industries. Interview guides will be designed to be flexible and adaptable to a range of targets. The interviews will gather responses on shipping decisions, land use impacts, and issues and opportunities as outlined by ADOT. Most of the interviews will be conducted face to face for the sake of probing, wide-ranging conversations; out of necessity some will be handled by telephone. Shipping decisions will be explored not only in terms of purchase criteria, but also in respect to selection of mode, route, time of day, and staging locations. The related service patterns will be investigated, covering temporal distribution, route reliance, truck loading profiles, and trip structure. A crucial facet will be sensitivity to service performance, because this is substantially influenced by the condition of infrastructure.

The stakeholder and public involvement process will address both highway and non-highway modes, as it will be important for key changes, decisions, and actors involved with non-highway transportation to be included in development of performance measures and targets. The suitability of traffic for rail diversion will be examined in this context.

Task 2.3 - Emerging Trends and Impacts on Arizona's Industries

In today's business environment, cost-effective, time-sensitive transportation services are increasingly a strategy for competitive advantage in manufacturing and service-based industries. Globalization of the U.S. economy has grown at a rapid pace over the past several decades. As a border state to Mexico and a

gateway to burgeoning NAFTA trade, Arizona is at the forefront of the industrial globalization trend. Advances in technology and management practices are also allowing U.S. firms to develop strategies that enable customized products for mass-market distribution. These trends in supply chain management, as well as the trans-border issues facing Arizona, will be explored and summarized based upon stakeholder responses during the outreach process.

Task 2 Deliverables

Technical Memorandum #1: Freight Transportation Industry Analysis Report - Key elements of this report will include:

- An Arizona key industry profile describing major commodity flows by weight and value, key source and distribution markets: a descriptive narrative supplemented by tables, maps, and charts.
- Current industry trends, issues, problems, needs, and opportunities distilled from the outreach drawn into a key issues framework.
- Key Arizona industry supply chains will be documented using the standards for supply chain documentation developed by FHWA.
- A summary of existing and future international border crossing issues.

Stakeholder Contact Database - As part of the stakeholder involvement, the WSA Team will create an Access database of stakeholder contacts.

Task 3 - Assess the Existing Freight Infrastructure

The first step of this task will focus on identifying the existing freight network by its key components: highway, rail, air, and intermodal facilities. The purpose is to valuate key components of the existing transportation system serving freight stakeholders. These key components should be categorized by the mode of travel employed to move goods and commodities from points of origin to destination.

Task 3.1 - Institutional Environment Governing Freight Dependent Industries
This task will build upon the private stakeholder outreach by taking their issues and concerns to key public sector stakeholders and private sector associations representing broad cross sections of the freight industry. A series of 10-12 face to face interviews will be arranged with transportation policy officials, economic development offices, and regulatory enforcement officials. The Study Team will also provide information about innovative practices and programs being conducted in other state transportation agencies, as well as examine programs in related public agency programs such as economic development.

Task 3.2 - Identify Major Freight Corridors on the Existing Highway System
Highway facilities serve the state by providing connectivity to the region's airports, rail-highway terminals, truck terminals, and businesses. The data assembled should be sufficient to evaluate existing and future operating conditions of the Interstate Highway System, National Highway System, Inter-regional Corridors, and major connections from these systems to significant freight hubs. The highway network serving the state will be described in terms of traffic volumes, percentage of truck volume, level of service, intersection/interchange configurations, and key public truck facilities (e.g. parking areas, weigh stations, etc.).

Task 3.2 - Inventory / Assess Existing Rail Freight System
This subtask will describe the state's rail system in terms of the railroads and related line ownership/operation, physical composition of the system including tracks and facilities, as well as a

functional classification of use. It is our understanding that the current Arizona Railroad Inventory and Assessment will provide much of the desired data. The WSA Team will build upon the existing study effort to examine connectivity to the highway system and the impact of likely future developments in major rail corridors.

Task 3.3 - Inventory / Assess Existing Air Cargo System
This subtask will review the airport facilities that serve cargo activity to determine the level of activity, each airports role in the state's air cargo network, and examine the type of cargo being serviced by each facility. Airport data will be required both statewide and route specific. The primary sources of this data will be the state DOT, the Federal Aviation Administration, commercial sources of air cargo data, and the airlines themselves. Information on the facilities and levels of cargo activity will be inventoried including:

- Airfield facilities - runways, taxiways
- NAVAIDS
- Terminal facilities
- Ground transportation facilities
- Cargo storage/handling facilities
- Cargo carriers/aircraft used
- Activity levels - cargo tonnage by type
- Potential intermodal connections

Task 3 Deliverables

Technical Memorandum #2: Multimodal Infrastructure Assessment Report: The definition of Arizona's "goods movement system" will include the: 1) high-level distribution system; 2) major commodity handling and storage nodes; and, 3) local access between the distribution system and the nodes.

The distribution system refers to the network of highway corridors, railways, and airports which link regions and markets. A strategically integrated network is essential to the efficient multimodal distribution of freight. The consultant team will analyze the overall ability of the logistics network to effectively and seamlessly move freight to, from, and through Arizona and its immediate environs. The second component of the system is comprised of the major facilities where commodities are transferred between modes and origin/destination -- rail transfer facilities, air cargo facilities, etc. The consultant team will identify the major facilities within Arizona and adjoining states that serve as the origins and destinations of Arizona freight traffic. The third component of the system that will be identified and analyzed are the intermodal connectors, i.e. intermodal access routes between the distribution network and major freight handling sites and facilities.

Task 4 - Strategic Directions for Freight Planning

Task 4.1 - Identify Broad Themes to Guide Future Freight Planning
ISTEA helped set the stage for intermodal considerations in statewide transportation planning processes. Indeed, before ISTEA was passed, few states had planning processes that were comprehensive to the extent that they even considered freight issues. ISTEA and TEA-21 visions for surface transportation declared that transportation systems should be intermodal in character, economically efficient, environmentally sound, and socially responsive. There are a number of compelling reasons why states and MPOs are incorporating freight into their long range planning processes, including:

- Link Transportation Investments to Economic Development

- Improve Safety and Quality of Life-
- Public Awareness/Education
- Homeland Security

Using these themes as a starting point, the WSA Team will conduct a review the freight planning themes in other state agencies. We will also review the latest freight planning resources from FHWA and TRB. This information will be presented to ADOT and its freight stakeholders to identify freight planning themes consistent with ADOT's overall planning process, and meaningful to its freight constituents.

Task 4.2 - System Performance and Impacts on Freight Critical Industries
During the outreach process conducted in Task 2, interview guides will be designed to explore chronic and event specific deficiencies/failures of the transportation networks for Arizona shippers, receivers, and carriers. Information gathered during the outreach process will be related back to the system performance analysis conduced in Task 3. The results of these two efforts will be analyzed and presented as an initial performance score card with a description of specific events and trends with a discussion of implications for future performance. This task will also help establish the key areas for performance indicators.

Task 4.3 - The Impacts of Freight Planning and Economic Development
Economists on the WSA Team have a depth of experience analyzing the impacts of the freight industry on regional and state economies. To help understand the impact of integrated freight planning strategies on economic development, we will provide a three part analysis. First, our economists will analyze the economic significance of the transportation, logistics, and warehousing sectors on the Arizona economy. Next, we will develop a matrix comparing the freight and logistics industries of Arizona to other states using a variety of economic indicators. Finally, we will examine the potential impacts of national and international economic trends on Arizona's freight industries.

Task 4.4 - Establish a Freight Planning Framework
The WSA Team will review ADOT's existing planning process, performance measures, and databases, and make recommendations for enhancing freight planning in the long range planning process. This review will evaluate how freight considerations gain input to the existing process, how priorities can be affected by freight projects, financial considerations, and monitoring. Our evaluation will include an assessment of freight goals and objectives, issues, choices, coordination, data needs, infrastructure barriers, efficiency obstacles, and performance measurement.

Task 4.5 - Develop Key Freight Performance Indicators
The purpose of this subtask is to establish mode-specific, system level performance measures that can be used by ADOT to examine specific needs/deficiencies identified through the study effort, as well as legacy measures that can be used by ADOT in its continuing efforts to incorporate freight into its planning process. Specific consideration must be given to the ability of supporting selected measures through easily obtained data, and compatibility with the agency's existing analysis tools.

Task 4 Deliverables

Technical Memorandum #3: A Strategic Direction for Statewide Multimodal Freight Transportation Planning: This will be a detailed working paper summarizing the options and recommendations for improving Arizona's freight transportation planning process, and data collection needed to create and measure freight performance, the existing infrastructure impediments and obstacles, as well as emerging trends in the industry that could be applied to Arizona. A working paper detailing the results of the task will be prepared and reviewed with Technical Advisory Committee members.

Task 5 Final Report

The study findings and recommendations will be presented in a Final Report and Executive Summary. The Final Report will be prepared based on the technical memorandums and comments received from the TAC and potentially the private sector freight advisory committee. The draft final report will highlight key finding of the technical analyses, as well as a framework of policies, strategies and performance indicators for advancing freight planning within ADOT. The Final Report and Executive Summary will be submitted in hard copy and CD format to each member of the TAC. Twelve hard copies of the Final Report, and Executive Summary, along with 20 copies of each on CD will be submitted to the ADOT-TPD Project Manager.

Project Schedule